



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10  
OREGON OPERATIONS OFFICE  
805 SW Broadway, Suite 500  
Portland, Oregon 97205

September 19, 2008

Mr. Robert Wyatt  
Northwest Natural & Chairman, Lower Willamette Group  
220 Northwest Second Avenue  
Portland, Oregon 97209

Re: Portland Harbor Superfund Site; Administrative Order on Consent for Remedial Investigation and Feasibility Study; Docket No. CERCLA-10-2001-0240 – Response to EPA Comments on the Background Data Processing and Outlier Identification Memo

Dear Mr. Wyatt:

EPA has reviewed the Lower Willamette Group's response to EPA's comments on the Background Data Processing and Outlier Identification Memo. EPA's comments were dated July 24, 2008. We received your response to our comments on September 3, 2008. In general, EPA agrees with most of the responses to EPA comments (Responses to comments 1, 3, 4, and 5). However, EPA has concerns about the proposed response to Comment 2 and the proposal to log-transform the data prior to the statistical outlier evaluation in the draft RI Report. Specific concerns are outlined below:

Comment 2: EPA disagrees with the first sentence in the response ("The underlying premise of using bedded sediment data from the upriver reach (RM15.3 to 28) as the primary background dataset is that this reach is not influenced by Portland Harbor sources"). As EPA has stated previously, sediment concentrations should be considered representative of background only when not influenced by any specific sources or unavoidable regional influences. Given the location of our upriver sampling locations, this will necessarily include sources other than Portland Harbor sources. EPA understood that the LWG agreed with this qualification as evidenced by your evaluation of potential sources in the upriver reach.

EPA continues to maintain that the identification of statistical outliers should be used to identify station locations that are potentially influenced by localized sources. As stated in our July 24, 2008 comments, statistical outlier samples clustered together are more likely to have been influenced by localized sources than statistical outlier samples that are distributed throughout the upriver reach. Localized high concentrations of chemicals in sediment likely indicate the presence of a local source, and should be excluded from the background data. That said, EPA agrees that additional evaluation of the geographical distribution of statistical outliers is warranted. However, EPA cautions that unless an

alternate explanation of why statistical outliers are clustered together, EPA will determine that they are representative of a localized source and will not allow these data to be used for the purpose of background estimation.

Comment 3: LWG states that it is statistically valid and preferable to transform non-normal data, where possible, to normal distributions before performing outlier tests. The response further states that the LWG intends to implement this revision to the method in the outlier evaluation in the draft RI. EPA acknowledges that environmental data sets are typically non-normally distributed. The ProUCL 4.0 user guidance states in Chapter 7 that the two simple classical outlier tests available in ProUCL 4.0 (Dixon and Rosner) both require the assumption of normality of the data set without the outliers. The ProUCL 4.0 technical guidance states in Section 7.1.1.1 that *"It is suggested to avoid the use of a transformation such as a log-transformation to achieve normality to be able to use the Dixon test."* All cleanup and remediation decisions are made based upon the data set in raw scale" [emphasis in original]. EPA acknowledges that this statement contradicts the following statement in EPA's Statistical Method for Practitioners regarding the Dixon test and other parametric tests: "If the data are not normally distributed, then either transform the data, apply a different test, or consult a statistician" [EPA 2006, Section 4.4.3.]. However, the ProUCL guidance supersedes this guidance. It should be noted that the ProUCL user guidance does not present the non-parametric Walsh's test (for greater than 50 data points), which can be used with data that are not normally distributed. At this point, EPA recommends not transforming the data prior to evaluation in ProUCL and applying either the Dixon or Rosner outlier tests based on the sample size.

As you are aware, EPA and the LWG are interested in resolving as many Remedial Investigation (RI) and Baseline Risk Assessment (BRA) Report issues as possible. As a result, EPA expects that the LWG will incorporate the above comments into the RI and BRA reports.

If you have any questions, please contact Chip Humphrey at (503) 326-2678 or Eric Blischke (503) 326-4006. All legal inquiries should be directed to Lori Cora at (206) 553-1115.

Sincerely,

A handwritten signature in black ink, appearing to read 'Chip Humphrey', written over a horizontal line.

Chip Humphrey  
Eric Blischke  
Remedial Project Managers

cc: Greg Ulirsch, ATSDR  
Rob Neely, NOAA  
Ted Buerger, US Fish and Wildlife Service  
Preston Sleeper, Department of Interior  
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